F1-310

I. EXECUTIVE SUMMARY

a. Project Title and Applicant Name:
Lower American River Alternative Bank Protection: A Proposal to Provide Aquatic and SRA Habitat Restoration.
Sacramento Area Flood Control Agency
Timothy N. Washburn, Agency Counsel
1007 7th Street, 5th Floor — Phone: (916) 440-7606
Sacramento, CA 95814 — Fax: (916) 440-8289

b. Project Description and Primary Biological/Ecological Objectives: Sacramento Area Flood Control Agency (SAFCA), the Sacramento Area Water Forum, and other American River stakeholders have joined together to offer this proposal for a demonstration project to restore shaded riverine aquatic (SRA) habitat and instream aquatic cover concomitant with alternative bank protection. A primary benefit of the proposed project is the creation of SRA habitat and instream cover and habitat for priority fish species, including steelhead and splittail.

c. Approach/Tasks/Schedule: The proposed project includes eight tasks. It will require three years to implement, monitor and produce results. It is anticipated that site selection, demonstration project design, environmental review and permitting will be completed by summer 1998. Key milestones would be: completion of site selection and final project design by May 1998; construction completed by September 1998; year 1 monitoring results by September 1999; year 2 monitoring results and final report by October 2000.

d. Justification for Project and Funding by CALFED: Changes in the geomorphology of the floodplain, stream channel and streamflow of the LAR have led to a reduction in riparian and SRA habitat. The project site is devoid of SRA habitat, and the uniformity of near-shore gradients and substrate, and lack of herbaceous and woody cover suggest that creation of this combination of instream and SRA habitat would be especially beneficial. The project is located to provide the maximum benefit to juvenile steelhead. Additionally, the habitat value of the site will be increased by the addition of SRA habitat, instream cover, habitat complexity, and hydraulic diversity.

This is a new SAFCA project which has potential application Delta-wide. The project is intended to demonstrate a technique to create durable, permanent instream habitat for steelhead, splittail, and chinook salmon. The SAFCA board has approved this grant proposal, and indicated that SAFCA will assume responsibility for operation and maintenance of the project.

e. Budget Costs and Third Party Impacts: The total budget costs are $224,795 according to the following tasks:

Task 1	$20,125	Task 5	$216,200
Task 2	$34,500	Task 6	$5,750
Task 3	$3,450	Task 7	$0
Task 4	$103,000	Task 8	$57,500

Third-Party Impacts: Third party impacts, although expected to be minimal, would be evaluated during the environmental review process, including potential impacts to recreationists and cultural resources.

f. Applicant Qualifications: SAFCA is the Project Sponsor. SAFCA and the Water Forum have assembled a team of resource consultants to conduct the proposed study. Swanson Hydrology and Geomorphology, H.A.R.T., Inc., and Surface Water Resources, Inc. (SWRI) are proposed to implement the project. Swanson Hydrology and Geomorphology was selected as the SAFCA consultant for their expertise in designing the project and their expertise in fluvial geomorphology. H.A.R.T., Inc. was selected as the SAFCA consultant for vegetation monitoring because of their experience in designing the vegetative components of this project, and their demonstrated experience with this type of habitat restoration. SWRI was selected as the SAFCA consultant to conduct the fisheries monitoring for this project because of their experience in ecological resources issues, particularly aquatic issues, and planning processes in the lower American River, the Central Valley, and the Bay-Delta.

Project Management - Timothy Washburn, Agency Counsel
Project Management & Design - Mitchell Swanson, Ph.D., Senior Fluvial Geomorphologist
Vegetation Monitoring - Jeffrey Hart, Ph.D., Senior Ecologist
Aquatic Monitoring & Sampling Design - Paul Bratovich, M.S., Senior Scientist
Aquatic Monitoring & Sampling Design - Michael Bryan, Ph.D., Aquatic Ecologist
Hydraulic Modeling - George "Buzz" Link, P.E., Senior Water Resources Engineer

g. Monitoring and Data Evaluation: Monitoring objectives include: 1)assess use of the habitat by priority fish species; 2) document success of planting efforts; 3) document changes in vegetative density and structure and relate these to observations of erosion and deposition; 4) identify trends in erosion or deposition at permanent transects and on the platform and compare these trends to changes in control transects; and 5) assess physical integrity of platforms, and identify design/construction improvements for use at other sites. Monitoring data pertaining to the parameters identified above will be analyzed statistically, as appropriate, to determine differences among treatments and differences between improved and unimproved sites.

h. Local Support/Coordination with other Programs/ Compatibility with CALFED objectives: The Sacramento Area Water Forum, representing 46 stakeholders, the City/County Office of Metropolitan Water Planning, and the LAR Task Force which is comprised of 8 Community Groups, 6 Environmental Interests, 2 Recreation Interests, 8 Flood Control Agencies, and 3 Resource Agencies (see attached Statement of Support). This demonstration project is consistent with the objectives of CALFED and the goals of other ongoing projects. The AFRP recommends developing a riparian corridor management plan. The Lower American River Technical Team endorses restoration of wetland-slough complexes and riparian habitats along levees in the lower portion of the LAR, and management and restoration of large woody debris, especially in the upper reaches of the LAR.

II. TITLE PAGE

a. Title of Project: Shaded Riverine Aquatic (SRA) Habitat/Instream Cover Demonstration Project

b. Name of applicant(s): Sacramento Area Flood Control Agency

Principle investigator(s):

Mitchell Swanson
Fluvial Geomorphologist
Swanson Hydrology and Geomorphology
519 Seabright Avenue, Suite 210
Santa Cruz, California 95062
Phone: (408) 427-0288
Fax: (408) 427-0472
email: MSWAN@aol.com

Jeffrey Hart, Ph.D.
Senior Ecologist
H.A.R.T., Inc.
1547 33rd Street
Sacramento, CA 95816
Phone: (916) 451-6679
Fax: (916) 451-1153

c. Type of Organization and Tax Status: Joint Powers Agency, IRS Exempt

d. Tax Identification Number: 94-6000529

e. Technical and Financial Contact person(s):

Financial Contact Person
Julie Lienert
Director of Administration, SAFCA
1007 7th Street, 5th floor
Sacramento, CA 95814
Phone: (916) 440-7607
Fax: (916) 440-8289

Technical Contact Person
Timothy N. Washburn
Agency Counsel, SAFCA
1007 7th Street, 5th Floor
Sacramento, CA 95814
Phone: (916) 440-7607
Fax: (916) 440-8289

f. Participants/Collaborators in Implementation: The Sacramento Area Water Forum, representing 46 stakeholders, the City/County Office of Metropolitan Water Planning, and the LAR Task Force which is comprised of 8 Community Groups, 6 Environmental Interests, 2 Recreation Interests, 8 Flood Control Agencies, and 3 Resource Agencies (see attached Statement of Support).

g. RFP Project Group Type - Public Works Construction Projects

III. PROJECT DESCRIPTION

a. Project Description and Approach

A demonstration project is proposed to install and study four, small boulder-cluster riparian platforms on the lower American River to provide both habitat restoration and bank protection. This demonstration project will be extensively monitored to assess wide-scale applicability, to propose design improvements, and to document benefits to priority species, including steelhead, splittail, migratory birds, and the priority shaded riverine aquatic (SRA) habitat. Anticipated benefits of this innovative bank stabilization technique include enhancement of riparian and instream habitat, as well as a replacement for traditional bank stabilization techniques, which tend to reduce habitat values.

These riparian platforms will mimic natural aquatic-wetland-riparian habitat gradients, increase habitat and topographic complexity, and provide instream cover habitat for priority fish species. The creation of shaded riverine aquatic habitat will enhance diversity of instream habitat for aquatic species and improve riparian habitat for terrestrial species. The platforms will also increase hydraulic roughness, potentially reducing erosion and increasing sediment deposition at the site.

A key project objective is to demonstrate the use of these riparian platforms as alternative bank protection. The platforms will stabilize river banks by eliminating high velocity flow impingement on erodible banks. These "river-friendly" prototypes could have wide-scale applicability as both habitat restoration and flood control.

The project design includes the installation of four, small "boulder-cluster riparian platforms" on the Lower American River (Figures 1 and 2) consisting of a perimeter of boulders backfilled with soil and riparian plantings (Figures 3, 4 and 5). When installed on degraded, eroding banks, these structures will significantly increase both riparian and instream habitat diversity for aquatic and terrestrial species, and potentially reduce or eliminate the need for expensive traditional bank stabilization treatments.

A key project purpose is to develop the knowledge necessary to construct the "boulder-cluster riparian platforms" in a variety of settings, and document the benefits of the platforms to priority fish species. Construction methodology will also be refined through the demonstration study.

The project will be implemented with the participation of the Technical Assistance Team proposed separately under the Comprehensive Habitat Management Program to: 1) develop site selection criteria; 2) select a demonstration project site based on the lower American River from a candidate list of five sites; 3) develop the demonstration project construction plans and specifications; 4) oversee permitting and construction; and 5) evaluate monitoring data, and through an adaptive management approach, develop recommendations for future implementation. This process will allow the participation of a diverse group of stakeholders on the lower American River, and promote local support of the project.

b. Location and/or Geographic Boundaries

The project site is the Lower American River. The five candidate sites for a demonstration project are located between River Miles (RM) 3.0 and 12.0. The techniques have application throughout the Sacramento and San Joaquin River systems where levees require fixed berms and bank protection.

c. Expected Benefits

A primary benefit of the proposed project is the creation of SRA habitat and instream cover and habitat for priority fish species including steelhead and splittail. These habitats provide resting and feeding areas for juvenile fish. Boulders provide some degree of velocity refuge in high flows, as well as hydraulic diversity and escape cover at lower flows. The primary stressors addressed by the project include loss of shallow water habitat, degradation of instream habitat conditions, and loss of lotic conditions. Another key benefit of the project is to promote and document the effectiveness of the proposed techniques as alternative bank protection that is consistent with both flood control objectives and habitat restoration objectives. A secondary benefit of the project will be the potential for increasing sediment and spawning gravel recruitment through encouraging deposition of materials due to increased hydraulic roughness.

Since the platform mimics natural aquatic-wetland-riparian habitat gradients, it can serve to provide the type of microhabitat diversity which has often been eliminated through floodway improvements. The platforms serve to substantially broaden the width of these habitat zones, increase their lineal extent, and to break up the continuity of the shore zone, increasing habitat complexity. The project has long-term benefits in terms of habitat creation.

Further benefits of the proposed project include benefits to secondary priority species, including migratory birds, through the restoration of riparian and SRA habitat. As a demonstration project, the project could benefit aquatic and terrestrial species and habitats at other locations in the American River and in the Delta by introducing a form of habitat restoration that is compatible with flood control.

d. Background and Biological/Technical Justification

Changes in the geomorphology of the floodplain, stream channel and streamflow of the LAR have led to a reduction in riparian and SRA habitat. The project will be located to provide the maximum benefit to juvenile steelhead. Additionally, the project site will be selected in an area where the habitat value will be increased by the addition of SRA habitat, instream cover, habitat complexity, and hydraulic diversity.

This is a new SAFCA project which has potential application Delta-wide. The project is intended to demonstrate a technique to create durable, permanent instream habitat for steelhead, splittail, and chinook salmon, and to demonstrate an alternative bank protection method. Progress to date includes development of preliminary designs and soliciting feedback from the Lower American River Technical Team and the Lower American River Task Force. This grant proposal has been approved by the SAFCA board.

Damming, channelization and reclamation along the major rivers of the Sacramento and San Joaquin Valleys has resulted in narrow river corridors. Land use encroachment, channel incision and lateral erosion of remnant pre-dam terraces has created a need for extensive bank protection works, mainly barren, unvegetated 3H: 1V rip rap banks with little habitat value. Many miles of uniform rip-rap channel bank occur throughout Central Valley rivers and the Delta and estimates of future bank protection needs range to 100,000 lineal feet on the Sacramento River system alone.

Efforts by SAFCA and the Lower American River Task Force have made significant progress towards including habitat in bank protection structures, however, there is a lack of knowledge and therefore confidence in alternative and less expensive and less

intensive bioengineered bank protection methods that could create diverse habitat. Protection of the bank toe could significantly slow the rate of erosion while leaving the upper bank natural. Use of dense stands of woody riparian vegetation will be used to reduce flow velocity impinging on banks. By installing a topographically diverse and hydraulically rough (by virtue of dense woody riparian vegetation) "boulder cluster - riparian platform" key erosion control functions (toe protection, velocity reduction, mechanical strengthening of erodible materials through re-vegetation and root development) and habitat functions (complex hydraulics, cover, food sources) at the shoreline will be demonstrated.

The platforms will immediately provide bank toe protection once installed. However, the platform's benefit to protection of the upper bank will be low at first and then increase as sandbar willow, alder, and cottonwood mature. Significant protection will occur when plantings reach at least pole size, which will take 2-3 growing seasons. Hydraulic roughness will continue to increase, and near-bank flow velocities will decrease with each passing year. The platforms will not materially affect the flow area between the channel banks or levees at flood stages. Likewise, the overall effect on "Manning's n" for the channel between the levees is also expected to be negligible. Because of the trend of increasing stability, the structures will be especially durable once they mature, and their ecological benefit is excepted to also increase, as the platforms will eventually become a recruitment source for large woody debris.

e. Proposed Scope of Work

Task 1: Technical Assistance Team Consultations and Pre-construction Approvals: Convene Technical Assistance Team (described in a separate proposal by SAFCA for a Comprehensive Habitat Management Program) composed of representatives from SAFCA, California Department of Fish and Game, U. S. Fish and Wildlife Service, U. S. Army Corps of Engineers, the California Department of Water Resources Flood Management Division, the Lower American River Task Force and American River Flood Control. In a first meeting, develop site selection criteria and review candidate sites in the field. In a second meeting, select demonstration project site(s). The Team will be re-convened annually through the three-year monitoring period to review findings. Permitting processes will be initiated under this task.
Deliverable for this task: Summary of Project Sites and Memorandum Providing Confirmation of Construction Approvals.

Task 2: Site-Specific Construction Design. Evaluation of hydrologic modeling results for the 70-year period of record, including stage-discharge relationships by month. The hydrologic modeling results will be used to determine placement of boulders and vegetation. Preparation of base topographic map, grading plans, construction specifications and planting schematics are also a part of this task.
Deliverable(s) of this task: Final Design Report.

Task 3: Monitoring Plan. Based on the site specific construction design and hydraulic modeling results, prepare a project monitoring plan to collect data on: 1) fishery habitat and use; 2) performance of the platforms (identification of potential improvements); 3) platform durability; 4) erosion patterns; and 5) planting success.
Deliverable(s) for this task: Monitoring Plan.

Task 4: Construction. This task will include solicitation of construction bids, construction staking, actual construction, inspection, and preparation of as-built drawings.
Deliverable(s) for this task: Final Construction Report.

Task 5: Monitoring and Data Collection and Evaluation. Monitoring and data collection will be carried out following project construction in according to the Monitoring Plan developed in Task 3. Further discussion on monitoring and data collection activities is described in Section f below(Monitoring and Data Evaluation).
Deliverable(s) for this task: Annual monitoring reports.

Task 6: Refinement of Prototype Design. After evaluating data collected during the first two years of monitoring activities, a report discussing findings/results of demonstration will be prepared. As a part of the findings, a section discussing potential design improvements of the platform prototype will be prepared.
Deliverable(s) for this task: Final Results and Findings, and Prototype Design Enhancement Report.

Task 7: Progress Reports. As part of invoicing activities, progress reports will be prepared, describing key activities performed and deliverables submitted during the invoicing period. Included in these reports will be financial statements describing funds expended and budget remaining.
Deliverable(s) for this task: Progress Reports.

Task 8: Operation and Maintenance. Removal of invasive, exotic vegetation will continue until native species are established. Long-term monitoring will be performed after the first two years of the project as described in section f below.

f. Monitoring and Data Evaluation

Extensive monitoring will be performed during the first two years following construction, and long-term monitoring will be conducted in years 3, 4, 5, 7, and 10 following construction. Monitoring objectives include:

1. Assess use of the habitat by priority fish species.
2. Document success of planting efforts.
3. Document changes in vegetative density and structure and relate these to observations of erosion and deposition.
4. Identify trends in erosion or deposition at permanent transects and on the platform and compare these trends to changes in control transects.
5. Assess physical integrity of platforms, and identify design/construction improvements for use at other sites.

Monitoring data pertaining to the parameters identified above will be analyzed statistically, as appropriate, to determine differences among treatments and differences between improved and unimproved sites.

Fish Habitat Use: Relative abundance of juvenile steelhead and splittail using improved littoral zone habitats will be compared to the relative abundance of these species at unimproved sites using ANOVA procedures on log-transformed catch-per-unit-effort data.

Vegetation: Average rates of survival for each of the plant species used in the restoration will be determined for specified intervals throughout the monitoring program. Standard quadrat techniques will be employed to determine species-specific densities, which will be compared to densities at the time of planting to calculate interval survival rates (in percent). Following the appropriate transformation of percent data (i.e., arcsin, square root), species-specific interval survival rates will be compared among treatments using analysis of variance (ANOVA) procedures. Plant cover, the proportion of an area

covered by the vertical projection of plant crowns or basal area to the riverbed, also will be monitored using one or more standard methods (e.g., the Braun-Blanquet cover abundance scale, line intercept, or point intercept) and compared to a control site.

Physical Site Characteristics: The site will be equipped with a permanent staff gage in order to document stage and flow conditions during individual site visits and to develop depth-duration curves based on stream flows at the USGS "American River at Fair Oaks" stream gage. This data will allow an evaluation of plant responses to depth and duration of inundation and erosive velocities.

Permanent transects will be established at 10-ft intervals beginning 20 feet in front of each platform and extending 20 feet beyond the downstream tail. These transects will be surveyed prior to construction, after construction, and annually in September-October. Subsequent surveys will be "overlaid" in order to document area and extent of erosion and deposition. Changes in channel substrate will be documented using suitable methods characterizing the substrate within a 2-ft zone surrounding established points. A topographic map of the platform itself will be mapped each year during low water. "Relative change" 0.1 ft contour lines will be prepared to compare both year-to-year, and cumulative changes since construction. This will allow an examination of the platform's tendency to erode or receive deposition over time, and the effectiveness of the projects in providing alternative bank protection.

Site visits would be made during the high flow season to assess vegetative performance and any ongoing processes of erosion and deposition, as well as to provide photo and video documentation. Flow velocity measurements would be performed both prior to construction and during these visits at 1-2 foot intervals extending from the water's edge to maximum wadable depths. Similar year-to-year and cumulative-since-construction changes in velocity distributions would be prepared.

Differences in habitat complexity will be evaluated based on changes in plant cover, density, and hydraulic complexity. Hydraulic complexity will be determined by measuring current velocities at specified intervals along multiple line transects running perpendicular to shore. This will be conducted within multiple plots for each treatment. Locations for these transects will be determined using randomization procedures.

g. Implementability

The proposed demonstration project will be constructed on Sacramento County-owned property in the Lower American River Parkway. The project has direct ties to ongoing bank protection projects on the lower American River (SAFCA, Corps, DWR, American River Flood Control District, CDFG and USFWS) and the support of the Lower American River Task Force. Environmental review and permitting will be completed by SAFCA.

Because the project involves construction within the active stream channel of the American River and activities within the County Parks system, various permits from County, State, and Federal resource management agencies could be required, as well as compliance with CEQA and NEPA. In the event that steelhead are listed under the Endangered Species Act (ESA) by NMFS, habitat modifications and monitoring of steelhead would require Section 10 ESA permits. Streambed alteration agreements will be required from CDFG. Cultural resources surveys will need to be conducted. Activity permits will also be required from County Parks, as the entire project is on County Park lands.

The project is considered to have low sensitivity to changes in hydraulic conditions. The platform mass is sufficiently large to prevent direct structural failure. Potential toe failure (undercutting of the toe, thereby allowing the rock and fill to slump into the river) will be mitigated through an appropriately-designed "key" extending below the existing streambed. The platform fill will be initially exposed to erosion. This will be mitigated through a combination of methods including placement of cobble and gravel, planting with plugs of herbaceous vegetation, and protecting the surface with coir landscape fabric. Once the platform surface gains hydraulic roughness, deposition is expected to increase, which could lengthen the platform over time. Increasing root mass will further increase the structural stability.

IV. Costs and Schedule to Implement Proposed Project

a. Budget Costs

The attached tables describe the proposed project budget. CALFED support would aid in the development of vital research to improve the habitat values of bank protection structures. Present research stems from critical erosion projects only, where emphasis is having habitat fit a traditional bank protection structure. This project would focus on experimentation for habitat creation and bank protection in a less critical erosional setting.

b. Schedule Milestones

The proposed project will require three years to implement, monitor and produce results. We anticipate site selection, demonstration project design, environmental review and permitting will be completed by summer 1998. Key milestones would be: completion of site selection and final project design by May 1998; construction complete by September 1998; year 1 monitoring results by September 1999; year 2 monitoring results and final report by October 2000.

c. Third-Party Impacts

Third party impacts, although expected to be minimal, would be evaluated during the environmental review process, including potential impacts to plant and animal communities, recreationists, and cultural resources.

V. APPLICANT QUALIFICATIONS

SAFCA/Water Forum have assembled a team of resource consultants to conduct the proposed study. The project team does not have any conflicts of interests. The project will be designed and implemented under the direction of the SAFCA Executive Director, F.I. "Butch" Hodgkins. A support management team consisting of SAFCA staff and its technical advisors (Swanson Hydrology and Geomorphology, H.A.R.T, Inc., and Surface Water Resources, Inc.) will work with the Technical Assistance Team and LAR Task Force on final design of project features and deliverables. The management team and primary project roles are shown below:

Timothy Washburn	Project Manager
Mitchell Swanson	Hydraulic Design and Monitoring
Toby Hanes	Hydraulic Design and Monitoring
Jeffrey Hart	Terrestrial Habitat Design and Monitoring
Paul Bratovich	Aquatic Habitat Design and Monitoring
Amy Harris	Aquatic Monitoring and Endangered Species
George "Buzz" Link	Hydrologic Modeling
Rick Lind	Environmental Compliance and Regulatory Permitting

TIMOTHY WASHBURN is the General Counsel for the Sacramento Area Flood Control Agency with responsibility for planning and environmental review of regional flood control projects, supervision of consulting engineers, biologists, and associate counsels in preparation of project reports and related documents. Other activities include coordination of planning activities with the U.S. Army Corps of Engineers, U.S. Bureau of Reclamation, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, State Reclamation Board, State Department of Water Resources, State Department of Fish and Game, State Historic Preservation Officer, City of Sacramento, County of Sacramento, County of Sutter, Reclamation District 1000, and the American River Flood Control District. Notable projects include the American River Watershed Investigation, Natomas Area Flood Control Improvement Project, Natomas Basin Habitat Conservation Plan, and Interim Reoperation of Folsom Dam and Reservoir.

MITCHELL SWANSON is a senior fluvial geomorphologist with over 15 years of consulting experience related to restoration and resource management of large rivers, streams, and wetlands. He holds B.S. and M.S. degrees in earth sciences, with concentrations in fluvial geomorphology, sedimentary geology, and hydrology. He specializes in the development of technically and environmentally sound management and restoration plans for rivers and watersheds. A special focus involves the development of systematic field data collection and analysis programs tailored to the specific needs and resources of the individual project. His technical expertise includes historical geomorphic and hydrology studies and in determining the causes and effects of human modification on natural systems. Mr. Swanson has led efforts to integrate bioengineering and geomorphic principles into bank and stream stabilization projects. Mr. Swanson has become a recognized expert in conflict resolution between government agencies and public and private interests. Past project activities include streambed stability assessment, historical analysis, development of geomorphic and riparian vegetation design criteria for bioengineered structures, and design of aquatic enhancements.

TOBY HANES is a registered professional hydrologist and certified professional erosion and sediment control specialist with 21 years of experience. He holds a B.S. in watershed sciences and an M.S. in wildland hydrology with academic concentration in natural channel hydraulics and sediment transport, physical process watershed modeling, and

soil-plant-water relationships. Mr. Hanes' career includes positions as a field hydrologist with the U.S. Geological Survey and 13 years with the U.S. Forest Service, with positions at all levels of the agency from Ranger District to the Washington, D.C. office. Pertinent experience includes five years as a Forest Hydrologist at the Lake Tahoe Basin Management Unit, where he was directly responsible for a number of stream and wetland restoration projects. For the last nine years, Mr. Hanes has been in private consulting and established Hydro Science in 1990. Mr. Hanes has designed and supervised construction on numerous stream and wetland restoration projects and has had two on-call service contracts with the California Tahoe Conservancy to provide such services.

JEFFREY A. HART has had considerable success in designing and implementing restoration projects (e.g., Stone Lakes National Wildlife Refuge), biotechnical projects (e.g., Dry Creek, Lower American River), and resource studies (e.g., Cosumnes River, Lower American River). His clients include government agencies and non-profit organizations such as the Sacramento Area Flood Control Agency, Sacramento County Water Resources Division, Ducks Unlimited, and the Nature Conservancy. Hart has successfully completed restoration contracts with Ducks Unlimited, and has made considerable progress with CalTrans Beach Lake Mitigation site.

PAUL M. BRATOVICH has worked as a fisheries consultant and water resources specialist in California for the past 15 years. As a recognized fisheries expert of Central Valley streams and the Bay/Delta, with particular expertise on the American River, he is actively participating in a broad range of forums in a variety of consultative, advisory, and technical expert capacities. For example, Mr. Bratovich is presently serving as a lead consultant to the Sacramento Area Water Forum on behalf of the joint Sacramento City-County Office of Metropolitan Water Planning. As a fisheries expert on the Bay/Delta Oversight Council, Mr. Bratovich served on both the Aquatic Resources Technical Advisory Committee and on the Lower Sacramento River and Delta Tributaries Technical Team, as part of the Anadromous Fish Restoration Program (AFRP) of the Central Valley Project Improvement Act (CVPIA). He was assigned responsibility for the American and Yuba rivers, and continues to provide technical expertise regarding instream flow and habitat issues to the U.S. Fish & Wildlife Service. Mr. Bratovich has participated in a variety of other interagency consultative teams including the Interagency Ecological Program (IEP) Resident Fish Project Work Team and the Delta Smelt and Sacramento Splittail Co-applicants Technical Subcommittee, and continues to serve as a technical expert of the Lower American River Operations Working Group and the Alameda County Superior Court Lower American River Technical Advisory Committee in support of the Environmental Defense Fund (EDF) et al. vs. East Bay Municipal Utility District (EBMUD).

He has served as Principal-in-Charge on a number of project initiatives regarding lower American River fisheries issues and has been responsible for the design, implementation, and report preparation of multi-faceted aquatic ecology investigations of the lower American River. Investigative elements have included habitat classification and mapping, application of the Instream Flow Incremental Methodology (IFIM), estimation of chinook salmon abundance and distribution by habitat type, chinook salmon micro-habitat suitability data acquisition, and water temperature monitoring including the preparation of a water temperature calibration report for Folsom Reservoir and the lower American River.

AMY HARRIS is an aquatic ecologist with a strong background in biological sciences. Her expertise is in design and implementation of monitoring programs for freshwater ecosystems. Ms. Harris has prepared and provided support for aquatic and terrestrial resource impact analyses for CEQA and NEPA documents. She has conducted aquatic

and terrestrial surveys for use in habitat monitoring and planning, including riparian vegetation surveys along the southern Oregon coast and freshwater fisheries habitat in the lower Cosumnes River in California. She has also been involved in habitat restoration planning and implementation projects in the Central Valley.

GEORGE "BUZZ" LINK has over 22 years experience in real-time operation, analysis, and management of water and power systems. Mr. Link has special expertise in the development and application of mathematical computer models for water and power operations for planning purposes that incorporate water supply, water quality, power supply, flood control, recreation, and fish and wildlife considerations. Mr. Link is a registered professional engineer in the state of California. Prior to becoming president of Surface Water Resources, Incorporated, Mr. Link served as a water and power resources engineer with both Water Resources Management, Inc. and Resource Management International, and as a hydraulic engineer with the U.S. Bureau of Reclamation. Mr. Link developed operation simulation models for the U.S. Bureau of Reclamation that evaluate water and hydroelectric project attributes of existing and planned Central Valley Project facilities. These models facilitate evaluation of alternative water and hydroelectric project features and configurations and their effects on water supply and power generation.

RICK LIND has over 17 years of experience as a regulatory program manager, environmental planner and public involvement specialist in the energy, water and solid waste industries. He is a notable regulatory program management expert who has performed the spectrum of environmental review services, including analyses of licensing and permitting requirements, preparation of regulatory strategy reports, preparation of joint National Environmental Policy Act/State Environmental Regulatory documents, and compliance monitoring.

VI. Compliance with Standard Terms and Conditions

SAFCA will comply with all terms and conditions.

Cost

Lower American River Alternative Bank Protection									
Project Phase and Task	Direct Labor Hours	Direct Salary and Benefits	Overhead Labor	Service Contracts		Materials	Misc. and Direct Costs	Total Cost	Subtotal/ Task
				Labor	Materials				
Task 1: Pre-construction Approval			$2,625	$17,500					$20,125
Task 2: Site-specific Construction Design			$4,500	$30,000					$34,500
Task 3: Monitoring Plan			$450	$3,000					$3,450
Task 4: Construction			$3,000	$20,000	$80,000				$103,000
Task 5: Monitoring			$28,200	$188,000					$216,200
Task 6: Design Refinement			$750	$5,000					$5,750
Task 7: Progress Reports			$0	$0					$0
Task 8: Operation and Maintenance			$7,500	$50,000					$57,500
Subtotal			$47,025	$313,500	$80,000				$440,525
Contingency (10 percent)									$44,053
Subtotal			$47,025	$313,500	$80,000				
								Total Cost of Project	$484,578

PROJECT COST SHARING			
Project Phase and Task	Total Cost by Task	CALFED Cost Share	SAFCA Cost Share
Task 1: Pre-construction Approval	$20,125	$20,125	
Task 2: Site-specific Construction Design	$34,500	$34,500	
Task 3: Monitoring Plan	$3,450	$3,450	
Task 4: Construction	$103,000	$103,000	
Task 5: Monitoring	$216,200	$216,200	
Task 6: Final Report	$5,750	$5,750	
Task 7: Progress Reports	$0	$0	
Task 8: Operation and Maintenance	$57,500		$57,500
Contingency (10 percent)	$44,053	$44,053	
Total	$484,578	$427,078	$57,500

Item 8

NONDISCRIMINATION COMPLIANCE STATEMENT

COMPANY NAME
Sacramento Area Flood Control Agency

The company named above (hereinafter referred to as "prospective contractor") hereby certifies, unless specifically exempted, compliance with Government Code Section 12990 (a-f) and California Code of Regulations, Title 2, Division 4, Chapter 5 in matters relating to reporting requirements and the development, implementation and maintenance of a Nondiscrimination Program. Prospective contractor agrees not to unlawfully discriminate, harass or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, disability (including HIV and AIDS), medical condition (cancer), age, marital status, denial of family and medical care leave and denial of pregnancy disability leave.

CERTIFICATION

I, the official named below, hereby swear that I am duly authorized to legally bind the prospective contractor to the above described certification. I am fully aware that this certification, executed on the date and in the county below, is made under penalty of perjury under the laws of the State of California

OFFICIAL'S NAME
F.I. Hodgkins

DATE EXECUTED
July 24, 1997

EXECUTED IN THE COUNTY OF
Sacramento

PROSPECTIVE CONTRACTOR'S SIGNATURE
F.I. Hodgkins

PROSPECTIVE CONTRACTOR'S TITLE
Executive Director

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME
Sacramento Area Flood Control Agency

Item 11

Agreement No. _____

Exhibit _____

NONCOLLUSION AFFIDAVIT TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID FOR PUBLIC WORKS

STATE OF CALIFORNIA)

)ss

COUNTY OF Sacramento)

F.I. Hodgkins (name), being first duly sworn, deposes and says that he or she is Executive Director (position title) of Sacramento Area Flood Control Agency (the bidder)

the party making the foregoing bid that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

DATED: July 24, 1997 By _____ (person signing for bidder)

JANE DANKBAR
Comm. # 1127549
NOTARY PUBLIC - CALIFORNIA
Sacramento County
My Comm. Expires Feb. 26, 2001

(Notarial Seal)

Subscribed and sworn to before me on

July 24, 1997

_____ (Notary Public)

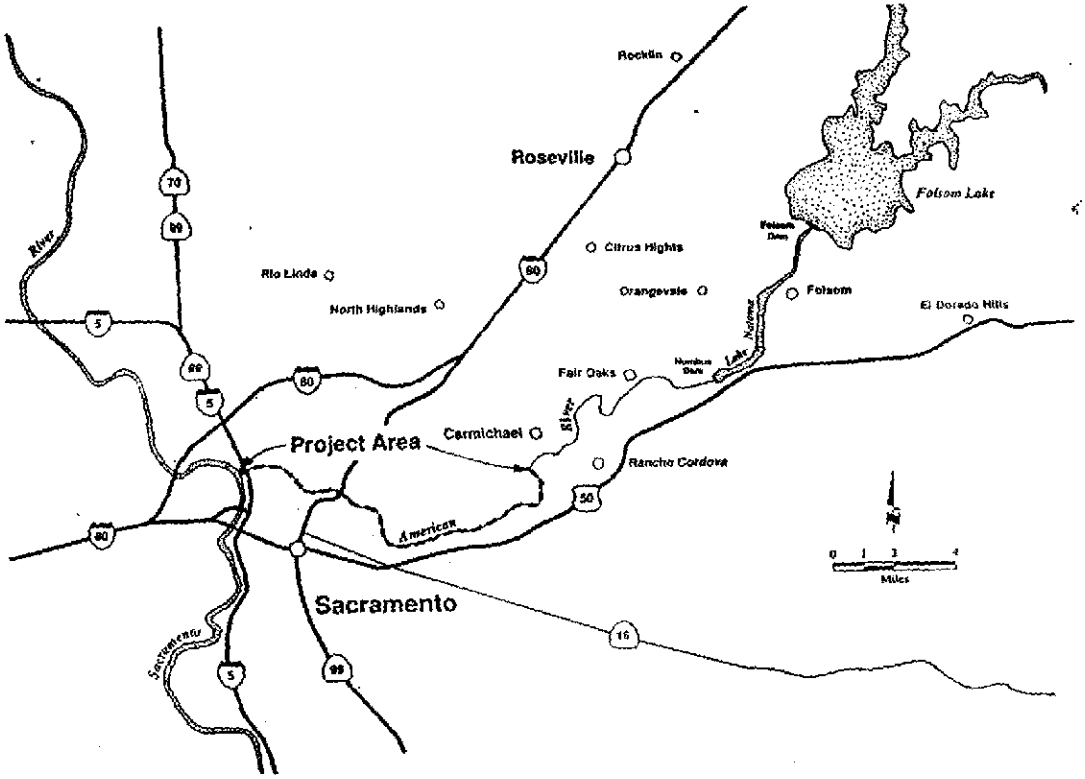


Figure 1: Project Area Vicinity Map.

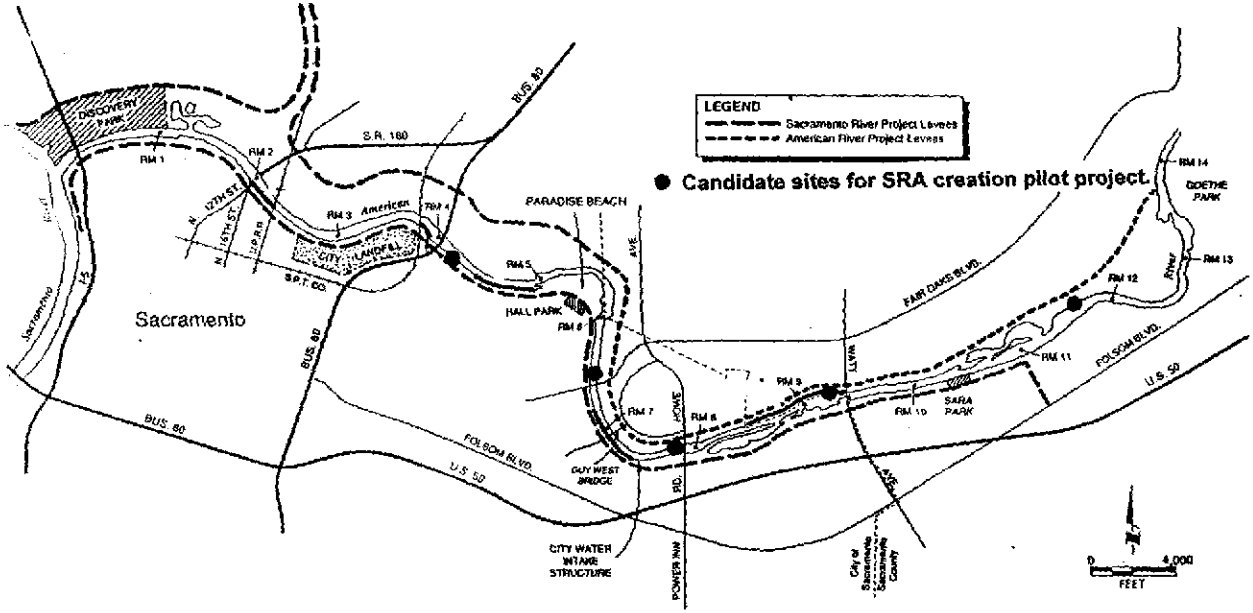
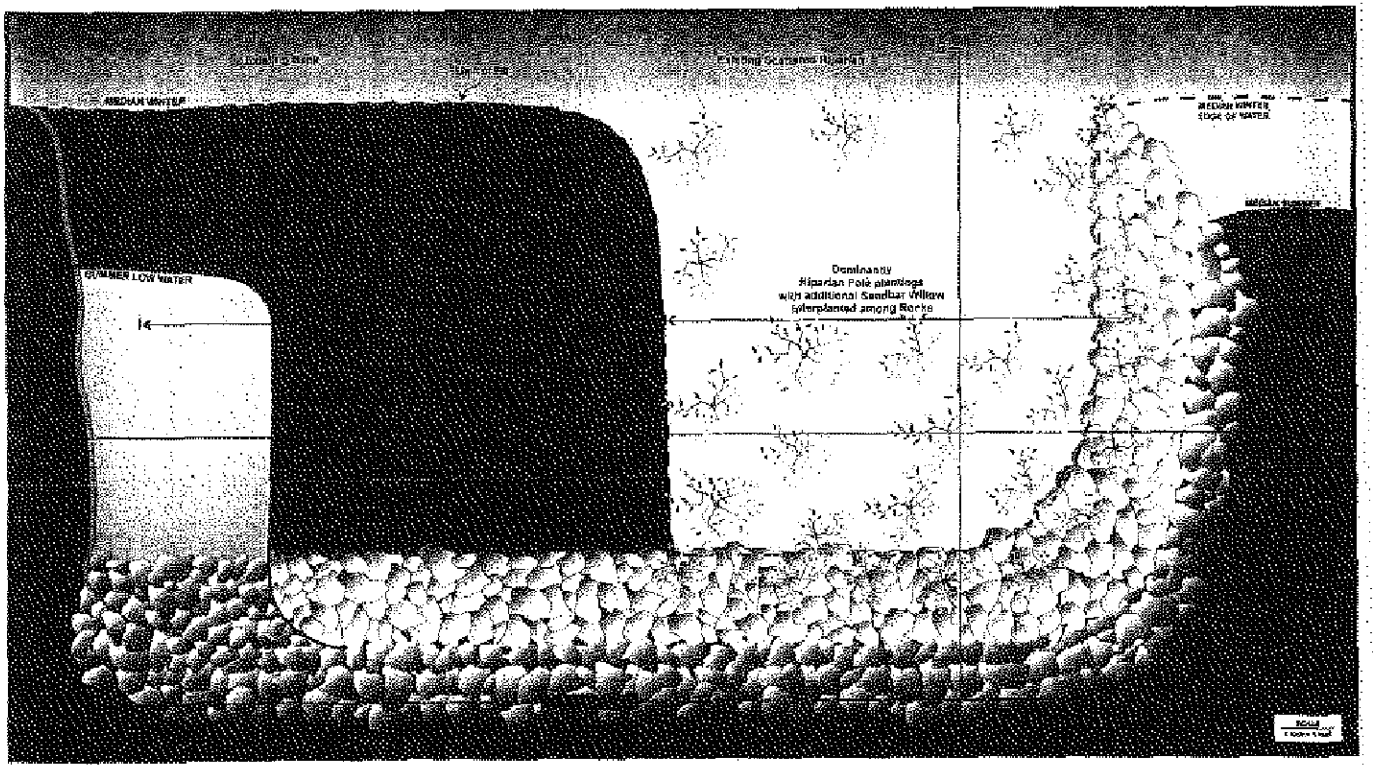


Figure 2: Lower American River project location map for SRA creation pilot project showing five candidate sites.

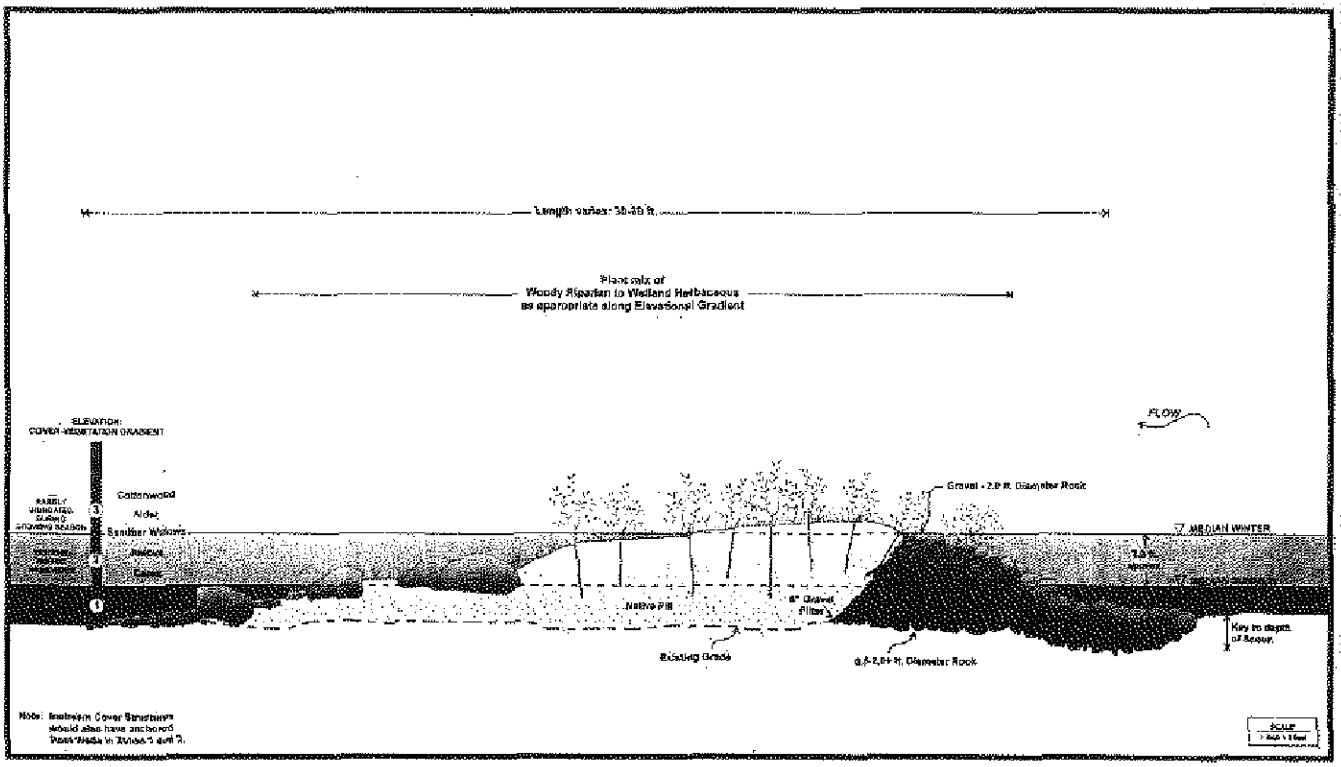


Mitchell Swanson Hydrology & Geomorphology

HYDRO SCIENCE

Figure 3: Typical plan view of Boulder Cluster Riparian Platform for direct creation of Shaded Riverine Habitat (SRA).

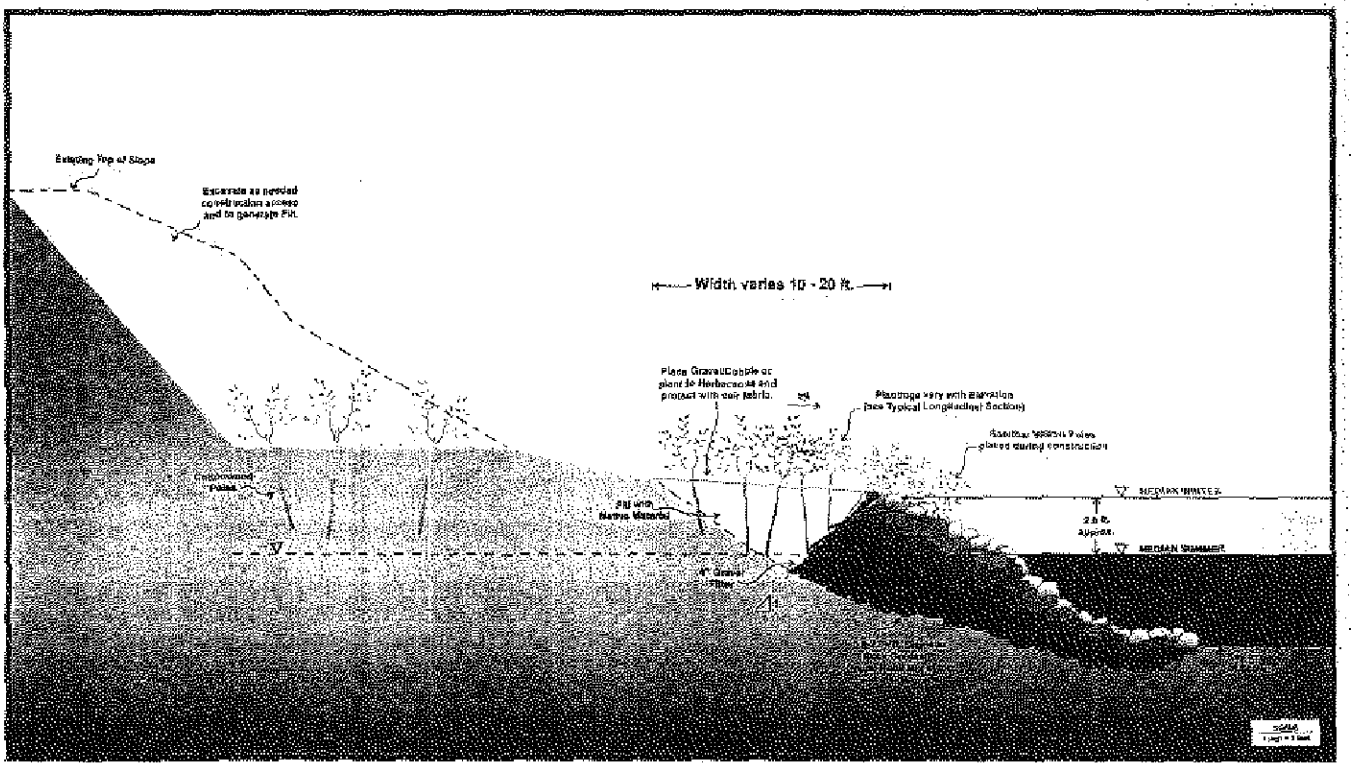
I-006734



Mitchell Swanson Hydrology & Geomorphology

Figure 4: Typical Longitudinal cross section A-A' of Boulder Cluster Riparian Platform for SRA creation.

I-006735



Mitchell Swanson Hydrology & Geomorphology

Figure 5: Typical cross section B-B' of Boulder Cluster Riparian Platform for SRA creation.

Lower American River Task Force

STATEMENT OF SUPPORT

for

CALFED APPLICATION

(Ratified by the Lower American River Task Force on July 15, 1997)

The Lower American River Task Force has reviewed and supports the attached application to CALFED for restoration of key sites on the Lower American River. We strongly urge that these valuable projects be funded. They will provide critical information for the development of restoration opportunities for this important river system.

Community Groups

1. American River Parkway Foundation
2. California State University, Sacramento
3. Campus Commons Park Corporation
4. Citizens-at-Large
5. Dos Rios Neighborhood Association
6. Natomas Community Association
7. River Park Neighborhood Association
8. Sierra Oaks Neighborhood Association

Environmental Interests

1. Environmental Council of Sacramento (ECOS)
2. Environmental Defense Fund
3. Friends of the River
4. Protect American River Canyons (PARC)
5. Save the American River Association (SARA)
6. Sierra Club, Mother Lode Chapter

Flood Control Agencies

1. American River Flood Control District
2. City of Sacramento Utilities
3. City of West Sacramento
4. Reclamation District 900
5. Reclamation District 1000
6. Sacramento Area Flood Control Agency (SAFCA)
7. State Reclamation Board
8. State Department of Water Resources

Recreation Interests

1. California Exposition and State Fair
2. Sacramento County Parks and Recreation

Resource Agencies

1. State Department of Fish and Game
2. State Lands Commission
3. U.S. Fish and Wildlife Service

310

PROTECT AMERICAN RIVER CANYONS

AUG 27 1997

PARC • P. O. Box 9312 • Auburn, CA 95604

August 22, 1997

Lester Snow, Executive Director
Gary Bobkee, Co-Chairperson, Eco-System Roundtable
Jason Peltier, Co-Chairperson, Eco-System Roundtable
CALFED Bay-Delta Program
1416 9th St., Suite 1155
Sacramento, CA 95814

Gentlemen:

On behalf of Protect American River Canyons (PARC), we are writing to express support of the application submitted by the Sacramento Area Flood Control Agency (SAFCA) and the Sacramento Area Water Forum to the Eco-System Roundtable for grant consideration.

PARC has been a member of the Lower American River Task Force since its formation in February 1994. The 32 member organizations of the Task Force have worked collaboratively over the past three years designing flood control projects that integrate environmental, recreational, and restoration elements.

PARC requests that you grant SAFCA and the Water Forum the resources to implement the package of innovative projects in their joint application. These projects were developed by SAFCA and Water Forum staff and consultants and were presented to the Task Force for collective approval. We believe these projects will allow all of us to gain knowledge about river restoration that could benefit this and similar river systems throughout California.

There may be more requests for grant money than money available. PARC is also a member of the upper American River Watershed Group which has also submitted proposals for worthwhile projects. We hope you will consider distributing money among a variety of projects in order to promote innovation projects around all watersheds connected to the Bay-Delta System. All the natural plumbing is connected and watersheds need comprehensive approaches for solutions.

Sincerely,

Gary W. Estes
Executive Committee

Frank Olrich
Executive Committee

Eric Peach
Executive Committee

cc: Kate Hansel, CALFED Bay-Delta Program
CONCUR

310

PROTECT AMERICAN RIVER CANYONS

PARC • P. O. Box 9312 • Auburn, CA 95604

August 22, 1997

Lester Snow, Executive Director
Gary Bobkee, Co-Chairperson, Eco-System Roundtable
Jason Peltier, Co-Chairperson, Eco-System Roundtable
CALFED Bay-Delta Program
1416 9th St., Suite 1155
Sacramento, CA 95814

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Sincerely,

Gary W. Estes
Executive Committee

Frank Ulrich
Executive Committee

Eric Peach
Executive Committee

cc: Kate Hansel, CALFED Bay-Delta Program
CONCUR

310

AUG 2 7 1997

OFFICE OF THE
MAYOR

JOE SERNA, JR.
MAYOR

CITY OF SACRAMENTO
CALIFORNIA

CITY HALL
ROOM 205
915 I STREET
SACRAMENTO, CA
95814-2672

PH 916-264-5300
FAX 916-264-7680
TDD (ONLY) 264-5849

August 20, 1997

Mr. Lester Snow, Executive Director, CALFED Bay-Delta Program
Mr. Gary Bobker, Co-Chairperson, Eco-Systems Roundtable
Mr. Jason Peltier, Co-Chairperson, Eco-Systems Roundtable
CALFED Bay-Delta Program
1416 9th Street, Suite 1155
Sacramento, CA 95814

Dear Mr. Snow, Mr. Bobker and Mr. Peltier:

I am writing to express the support of the City of Sacramento for the application submitted by the Sacramento Area Flood Control Agency (SAFCA) and the City/County Water Forum to the Eco-System Roundtable for grant consideration.

The City of Sacramento is a member of the Lower American River Task Force. Together, the 32 member organizations of the Task Force have worked collaboratively for the last three years to design flood control projects that integrate environmental, recreational and restoration elements.

The City of Sacramento asks that you grant SAFCA and the City/County Water Forum the resources to implement the package of innovative, demonstration projects in their joint proposal. These projects have been developed by SAFCA and the Water Forum staff and consultants and were presented to the Task force for collective approval. We believe these projects will allow us to gain knowledge about restoration that could benefit this and other small river systems in California.

Sincerely,

JOE SERNA, JR.
Mayor

JS/mecv

c: Kate Hansel, Eco-System Roundtable, CALFED Bay-Delta Program
CONCUR

310

OFFICE OF THE
MAYOR

JOE SERNA, JR.
MAYOR

CITY OF SACRAMENTO
CALIFORNIA

CITY HALL
ROOM 205
915 I STREET
SACRAMENTO, CA
95814-2672

PH 916-264-5800
FAX 916-264-7680
TDD (ONLY) 264-5819

August 20, 1997

Mr. Lester Snow, Executive Director, CALFED Bay-Delta Program
Mr. Gary Bobker, Co-Chairperson, Eco-Systems Roundtable
Mr. Jason Peltier, Co-Chairperson, Eco-Systems Roundtable
CALFED Bay-Delta Program
1416 9th Street, Suite 1155
Sacramento, CA 95814

Dear Mr. Snow, Mr. Bobker and Mr. Peltier:

I am writing to express the support of the City of Sacramento for the application submitted by the Sacramento Area Flood Control Agency (SAFCA) and the City/County Water Forum to the Eco-System Roundtable for grant consideration.

The City of Sacramento is a member of the Lower American River Task Force. Together, the 32 member organizations of the Task Force have worked collaboratively for the last three years to design flood control projects that integrate environmental, recreational and restoration elements.

The City of Sacramento asks that you grant SAFCA and the City/County Water Forum the resources to implement the package of innovative, demonstration projects in their joint proposal. These projects have been developed by SAFCA and the Water Forum staff and consultants and were presented to the Task force for collective approval. We believe these projects will allow us to gain knowledge about restoration that could benefit this and other small river systems in California.

Sincerely,

JOE SERNA, JR.
Mayor

JS/mecv

c: ✓Kate Hansel, Eco-System Roundtable, CALFED Bay-Delta Program
CONCUR

310

SAVE THE AMERICAN

SAVE THE AMERICAN RIVER ASSOCIATION, INC.
P.O. BOX 277638 - SACRAMENTO, CA 95827-7638 - (916) 387-1763

August 11, 1997

AUG 13 1997

Lester Snow, Executive Director
CALFED Bay-Delta Program
1416 9th Street, Ste. 1155
Sacramento, CA 95814

Attn: Gary Bobker, Co-Chairperson, Eco-System Roundtable
Attn: Jason Peltier, Co-Chairperson, Eco-system Roundtable

Dear Lester Snow, Gary Bobker and Jason Peltier

I am writing to express the support of the Save the American River Association, Inc. for the application submitted by the Sacramento Area Flood Control Agency (SAFCA) and the City/County Water Forum to the Eco-System Roundtable for grant consideration.

The Save the American River Association, Inc. is a member of the Lower American River Task Force. Together, the 32 member organizations of the Task force have worked collaboratively for the last three years to design flood control projects that integrate environmental, recreational and restoration elements.

The Save the American River Association, Inc. asks that you grant SAFCA and the City/County Water Forum the resources to implement the package of innovative, demonstration projects in their joint proposal. These projects have been developed by SAFCA and Water Forum staff and consultants and were presented to the Task Force for collective approval. We believe these projects will allow us to gain knowledge about restoration that could benefit this and other similar river systems in California.

Sincerely,

Frank F. Cirill

Frank F. Cirill, President
Save the American River Assn., Inc.
Residence: 5515 State Avenue
Sacramento, CA 95819
Phone: 455-2880

wgd

cc: Kate Hansel, Staff Officer
CONCUR
SARA Board of Directors

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SAFCA

Sacramento
Area Flood
Control
Agency

July 28, 1997

Ms. Kate Hansel
CALFED Bay-Delta Program
1416 Ninth Street, Suite 1155
Sacramento, CA 95814

Subject: Proposals to Establish Comprehensive Management Program and Four Habitat Demonstration Projects for the Lower American River Ecosystem

Dear Ms. Hansel:

The lower American River (LAR) ecosystem encompasses highly valued and biologically diverse aquatic and terrestrial resources. Many organizations are actively working to protect and enhance the ecosystem. Recent coordination among stakeholders has identified SAFCA's Floodway Management Plan and the Draft Water Forum Agreement as the central programs for helping to ensure the long-term viability of the LAR ecosystem. The Floodway Management Plan and the Habitat Mitigation Element of the Draft Water Forum Agreement have become the focus of the coordinated effort among the stakeholders.

SAFCA, with the support of the Water Forum and other LAR stakeholders, proposes a comprehensive management program for habitat management and monitoring of the LAR, consistent with the above plans. The program would consolidate and coordinate overall LAR habitat and species monitoring, and implement four demonstration habitat enhancement projects identified as high priority targets for the LAR ecosystem. The program would also establish a Technical Assistance Team representing the broad interests of the stakeholders, and serve as a peer review body and as a clearinghouse for information on the success of habitat studies and enhancement projects.

The proposed program for coordinating LAR management efforts would optimize investments in ecosystem enhancements, ensure efficiency in scientific research, and promote communications among the stakeholders towards the common goal of ecosystem protection. A key feature of the program is the coordination of project-level monitoring, such as the four proposed demonstration projects (submitted separately) and other ongoing projects. The information on overall ecosystem health and habitat project successes would be evaluated with data on species population monitoring and other ecosystem function to make cost-effective management decisions on future ecosystem investments.

Office 916-440-7606
FAX 916-440-8289

1007 - 7th Street, 5th Floor
Sacramento CA 95814-3407

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SIERRA OAKS Neighborhood Association

440 Drake Circle - Coldwell Banker Building, Sacramento, California 95864 VOICE MAIL (916) 557-1427

AUG 1 1 1997

August 7, 1997

Mr. Lester Snow, Executive Director
CALFED Bay-Delta Program

Mr. Gary Bobker, Co-Chairperson
Eco-System Roundtable

Mr. Jason Peltier, Co-Chairperson
Eco-System Roundtable

Dear Sirs:

This letter is written on behalf of the 859 members of the Sierra Oaks Neighborhood Association residing in the area between Howe and Watt Avenues, Fair Oaks Boulevard and the American River.

We strongly support SAFCA and the Water Forum in their CALFED grant request to provide funding for restoration and habitat management on the lower American River. Our concern for and support of the river's eco-system can be demonstrated in part by the hundreds of volunteer hours we have devoted to restoration and non-native growth eradication work, in cooperation with the American River Parkway Foundation, during the past 18 months.

We urge your approval of SAFCA/Water Forum's application to better assure the ultimate realization of effective, professionally managed habitat restoration.

Sincerely,

James S. Kruger
President

I —0 0 6 7 4 4

I-006744

310

AUG 1 1 1997

W. L. Warren
1901 University Avenue
Sacramento, Ca. 95825

Mr. Lester Snow, Executive Director
CALFED Bay-Delta Program

Mr. Gary Bobker, Co-Chairperson
Eco-System Roundtable

Mr. Jason Peltier, Co-Chairperson
Eco-System Roundtable

Gentlemen:

The Sacramento Area Flood Control Agency and the City/County Water Forum have applied to you for CALFED funding for a restoration and habitat management project on the Lower American River.

I believe that this proposed program is a necessary and vital step toward the overall restoration and preservation of the health of the river eco-system. It would be guided and controlled by a team with outstanding professionalism and expertise. Its yield could prove invaluable in the attainment of the goals and objectives for this reach of the river.

Most importantly, it provides a good opportunity to combine study, research and practical application into methodology for future development and habitat management.

Your favorable consideration and early approval of CALFED funding for this project is recommended.

Sincerely,

W. L. Warren
Member, LARTF.

cc: Kate Hansen
Eco-System Roundtable

John Gammon
CONCUR